EPA Region 7 TMDL Review

TMDL ID: IA 01-VOL-0010_1
IA 01-VOL-0010_2
Waterbody ID: IA 01-VOL-0010-1
Waterbody Name: VOLGA RIVER
Tributary: VOLGA RIVER
Pollutant: PATHOGENS
State: IA
HUC: 07060004
BASIN:
Submittal Date: 9/22/2006
Approved: Yes

Submittal Letter

State submittal letter indicates final TMDL(s) for specific pollutant(s)/water(s) were adopted by the state, and submitted to EPA for approval under section 303(d) of the Clean Water Act.

Letter, dated September 20, 2006, and received by EPA on September 22, 2006, formally submitted this TMDL for approval under section 303(d).

Water Quality Standards Attainment

The water body's loading capacity for the applicable pollutant is identified and the rationale for the method used to establish the cause-and-effect relationship between the numeric target and the identified pollutant sources is described. TMDL and associated allocations are set at levels adequate to result in attainment of applicable water quality standards.

The waterbody loading capacity cannot be reasonably expressed as a mass per time. Because the risk and corresponding water quality criteria associated with bacteria are based on epidemiological studies relating illness rates to concentration, these TMDL are expressed as a relationship of concentration at a continuum of flow conditions, as shown on the duration curve in Figure 3. This concentration is 126 organisms / 100 ml for the geometric mean or 235 organisms / 100 ml for the single sample maximum. The targets given should result in attainment of water quality standards.

Numeric Target(s)

Submittal describes applicable water quality standards, including beneficial uses, applicable numeric and/or narrative criteria. If the TMDL is based on a target other than a numeric water quality criterion, then a numeric expression, site specific if possible, was developed from a narrative criterion and a description of the process used to derive the target is included in the submittal.

The Iowa E. coli Bacteria Criteria for primary contact recreation are a season geometric mean of 126 organisms/100 ml of water and a single sample maximum value of 235 organisms/100 ml of water. The applicable designated uses are primary contact recreation and aquatic life.

Numeric Target(s) and Pollutant(s) of concern

An explanation and analytical basis for expressing the TMDL through surrogate measures (e.g., parameters such as percent fines and turbidity for sediment impairments, or chlorophyll-a and phosphorus loadings for excess algae) is provided, if applicable. For each identified pollutant, the submittal describes analytical basis for conclusions, allocations and margin of safety that do not exceed the load capacity.

This TMDL is expressed as a percentage of reduction in loading to achieve a fecal coliform target that is set at the E. Coli standard. Reductions are required for non-point source loads such as manure applied to cropland and pasture, and wildlife feces that are transported by precipitation events and those that are relatively constant such as cattle in streams and failed septic tanks. To achieve the standard, there must be 97% reductions in rain driven surface runoff loads and an 85% reductions in continuous NPS bacterial loads.

Source Analysis

Important assumptions made in developing the TMDL, such as assumed distribution of land use in the watershed, population characteristics, wildlife resources, and other relevant information affecting the characterization of the pollutant of concern and its allocation to sources, are described. Point, non point and background sources of pollutants of concern are described, including magnitude and location of the sources. Submittal demonstrates all significant sources have been considered.

Both point and nonpoint sources of pathogen indicators have been identified as the cause of the primary contact recreation use impairment on two impaired segments of the Volga River.

The Volga River is a tributary to the Turkey River flowing through a deep narrow valley bounded by rock bluffs and high hills. Agriculture is the primary land use and includes row crop farming, small grains, hay production and pasture land. Livestock feeding operations are found in the watershed with beef and hog operations the most common. Wildlife species present in the area include whitetail deer, red fox, beavers, raccoons, ring-necked pheasants, mourning doves, and numerous other species of songbirds, waterfowl, reptiles and amphibians. The density of deer in the watershed is one of the highest in the state.

There are six municipal and one private wastewater treatment plants within the Volga River watershed. The City of Volga has a wastewater treatment plant that discharges directly to the impaired segment of the Volga river. Six of the treatment plants are controlled discharge lagoons and one is a continuously discharging aerated lagoon. The NPDES facilities and their wasteload allocations are shown in the WLA section below.

It appears all sources have been identified.

Allocation

Submittal identifies appropriate wasteload allocations for point, and load allocations for nonpoint sources. If no point sources are present the wasteload allocation is zero. If no nonpoint sources are present, the load allocation is zero.

Wasteload allocations have been assigned to seven wastewater treatment plants as displayed in table 3.6. The three WWTP"s discharging directly into the Volga River have wasteload allocations set at the E. coli water quality standard. Load allocations for nonpoint sources should achieve the water quality standard geometric mean of 126 E. coli organisms per 100 ml. This will require a 97% reduction in rain driven surface runoff loads and an 85% reduction in continuous NPS bacterial loads (e.g., septics and cattle in the stream).

WLA Comment

Currently, none of the treatment facilities have E. coli or fecal coliform effluent limits but may be potential sources. The wasteload allocations for point source dischargers to the Volga River will be equivalent to the water quality criteria associated with the primary contact recreation beneficial use. Therefore, the WLA is a monthly geometric mean of 126 counts per 100 ml and a maximum daily value of 235 counts / 100 ml for facilities discharging directly to the impaired reaches or a higher value for those contributing to tributaries of the impaired reaches. There is one permitted open feedlot in the watershed and the wasteload allocation is zero.

Table 3.6. Wastewater Treatment Plant Wasteload Allocations

Treatment facility name	Receiving Stream	Distance to impaired reach, miles	% of bacteria remaining	Geometric mean	Single sample max.
Arlington wwtp	Brush Creek	6.6	67%	188	351
Fayette wwtp	Volga River	0	100%	126	235
Hawkeye wwtp	N. Branch Volga R.	10	55%	229	427
Maynard wwtp	Little Volga River	2.5	86%	147	273
Prairie View Care wwpt	Coulee Creek	6.9	66%	191	356
Volga wwtp	Volga River	0	100%	126	235
Wadena wwtp	Volga River	0	100%	126	235

LA Comment

Runoff conditions are strongly tied to elevated bacteria levels, therefore, load allocations assigned to these TMDL will be based upon the geometric mean of 126 / 100 ml - applicable target water quality criteria for E. coli.

Margin of Safety

Submittal describes explicit and/or implicit margin of safety for each pollutant. If the MOS is implicit, the conservative assumptions in the analysis for the MOS are described. If the MOS is explicit, the loadings set aside for the MOS are identified and a rationale for selecting the value for the MOS is provided.

These TMDLs are expressed as a percentage of reduction in loading to achieve a fecal coliform target that is set at the E. coli standard. The margin of safety is thereby explicit due to targeting fecal coliform reductions at the E. coli standard level.

Seasonal Variation and Critical Conditions

Submittal describes the method for accounting for seasonal variation and critical conditions in the TMDL(s).

These TMDLs were developed based on the Iowa water quality standards primary contact recreation season that runs from March 15 to November 15.

Public Participation

Submittal describes public notice and public comment opportunity, and explains how the public comments were considered in the final TMDL(s).

Public meetings to discuss the Volga River TMDL project reports and activities were held on July 6, 2005 in Elkader, IA and on July 7, 2005 in Fayette, IA. A second public meeting was held on August 3, 2005 in the watershed to discuss and present the draft TMDL. Comments received were reviewed and given consideration and, where appropriate, incorporated into the TMDL.

Monitoring Plan for TMDL(s) Under Phased Approach

The TMDL identifies the monitoring plan that describes the additional data to be collected to determine if the load reductions required by the TMDL lead to attainment of WQS, and a schedule for considering revisions to the TMDL(s) (where phased approach is used).

Monthly monitoring of the Volga River will continue to be done at the Turkey River confluence by IDNR at the Elkport ambient site. To really understand the Volga River pollutant problems and effectively manage their impact through improvements to controls, additional targeted monitoring is needed.

Reasonable assurance

Reasonable assurance only applies when reductions in nonpoint source loading is required to meet the prescribed waste load allocations.

There was no allowance for future growth included in these TMDL because current watershed land uses are predominantly agricultural and the addition/deletion of animal feeding operations cannot be predicted or quantified at this time. Permitted sources are limited to the water quality criteria at the point they influence the primary contact recreation use segment. Reasonable assurances of nonpoint sources are not required.